The sociological perspective on the knowledge-based society: assumptions, facts and visions

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Abstract

The paper will present the central discourse of the knowledge-based society. Already in the 1960s the debate of the industrial society already raised the question whether there can be considered a paradigm shift towards a knowledge-based society. Some prominent authors already foreseen 'knowledge' as the main indicator in order to displace 'labour' and 'capital' as the main driving forces of the capitalistic development. Today on the political level and also in many scientific disciplines the assumption that we are already living in a knowledge-based society seems obvious. Although we still do not have a theory of the knowledge-based society and there still exist a methodological gap about the empirical indicators, the vision of a knowledge-based society determines at least the perception of the Western societies.

In a first step the author will pinpoint the assumptions about the knowledge-based society on three levels: on the societal, on the organisational and on the individual level. These assumptions are relied on the following topics: a) The role of the information and communication technologies; b) The dynamic development of globalisation as an 'evolutionary' process; c) The increasing importance of knowledge management within organisations; d) The changing role of the state within the economic processes.

Not only the differentiation between the levels but also the revision of the assumptions of a knowledge-based society will show that the 'topics raised in the debates' cannot be considered as the results of a profound societal paradigm shift. However what seems very impressive is the normative and virtual shift towards a concept of modernity, which strongly focuses on the role of technology as a driving force as well as on the global economic markets, which has to be accepted. Therefore – according to the official debate - the successful adaptation of these processes seems the only way to meet the knowledge-based society. Analysing the societal changes on the three levels, the label 'knowledge-based society' can be seen critically. Therefore the main question of Theodor W. Adorno during the 16th Congress of Sociology in 1968 did not loose its actuality. Facing the societal changes he asked whether we are still living in the industrial society or already in a post-industrial state. Thinking about the knowledge-based society according to these two options, this exercise would enrich the whole debate in terms of social inequality, political, economic exclusion processes and at least the power relationship between social groups.

Introduction

According to political and scientific statements, we are living in knowledge-based societies; we are knowledge-based workers; we are working in knowledge-intensive sectors and we are producing knowledge-intensive services. Nowadays we are part of knowledge-based networks and we are practising knowledge-based co-operations in knowledge-based communities (Wyssusek 2004). Every day we combine, generate, protect, create, transfer, codify and save knowledge. Knowledge can be found in books, information systems, data systems, organisations, in the new media, in social activities, in cognitive structures, in all kind of products and in social systems.

As the listing shows, the term "knowledge" actually became a buzzword. Strictly spoken, it stands for higgledy-piggledy, and this means everything! Ideologically in the last years the term became an impressive paradigm for modernity and technological progress. In my opinion this seems extremely amazing for such an old and recognized term.

This contribution aims to analyse more precisely the term "knowledge" and tries to structure the debate on "knowledge" on three analytical levels: on the macroscopic level of society, on the level of organisations and on the level of the individuals (microscopic level). According to the different levels and their different theoretical background it becomes clear that there are different meanings of "knowledge". Coming up with these different debates the hypothesis is that 'knowledge' became a metaphor for the technological progress and new communication modes within different societal scopes without reflecting the social and cultural consequences of this single-edge perspective.

Assumptions of the knowledge-based society

In the philosophical discourse of antiquity the term "knowledge" was divided into four meanings: "*episteme* (knowledge about common and collective agreements, hereby episteme means a concrete knowledge about something, which can be easily passed to the next generation), *techne* (ability or practical capacity, knowledge about how to handle tasks and exercises, *phronesis* (intuitive knowledge like wisdom, which is combined with personal experiences and with a specific social attitude, which cannot be easily passed to other people), *métiers* (knowledge, which is based on personal experiences and social practises; it means a specific type of cleverness and individual brilliancy, developed by a person in a specific context; obviously *métiers* also cannot be easily passed to other persons)" (Renzl 2004, 32).

These differences between the different types of knowledge showed that the antique perspective had a broad understanding of "knowledge", which implied different dimensions of individual abilities. These abilities were recognised as highly important for the collective good. Many decades later –in the 17th and 18th Century - the development of the *Enlightment* and its philosophical concepts of measuring the world according to scientific methods brought the focus on human rationality. Now the creation of knowledge was more and more based on critical and philosophical methods. The notion of "knowledge" emerged as knowledge of sovereignty (dominance and transformation of nature), as knowledge of religious deliverance (sense of living) as well as knowledge of education (individual development) (Maasen 1999, 15, Kübler 2005). The notion of 'knowledge' became more and more abstract and was mainly focused on religion, metaphysics and sciences. Although there was no systematic development of this conceptual differentiation it seems implicitly contemporary (Kübler 2005).

In 1966, the term "knowledge society" was used for the first time by the North-American political scientist Robert E. Lane (according to the etymological reconstruction of Stehr 1994, 14 p, 26 p). In an article he argued against irrational politics and asked for more rational knowledge. He demanded rational knowledge as scientific expertise in order to improve societal decision making processes. On the basis of the technocratic optimism of the 1960s Lane demanded the strong co-operation between scientific (for him: objective) knowledge and the active creation of the societal development.

In sociological literature the US-sociologist Daniel Bell mainly is cited as the reference of defining a shift from industrial society to post-industrial society. In his book *The Coming of Post-Industrial Society* (Bell 1973) Bell underlined the central role of information/knowledge for his emergent social system. The book "seemed to fit quite beautifully with the explosive technological changes that hit advanced societies in the late 1970s. Impacted by the sudden arrival, apparently out of the blue, of staggering microelectronic technologies which rapidly permeated offices, industrial processes, schools and the home - computers soon seemed to be everywhere – there was an understandable and urgent search to discover where all these changing were leading"

(Webster 1995, 30). Already in the 1960s Bell declared in his famous article *The End of Ideology* the new sociological paradigm with the following main topics (Bell 1962):

1. Importance of theoretical knowledge on all social and institutional levels;
2. Importance of knowledge-based technology for the political decision making process and public service sector;
3. Importance of a new professional class with a specific professional profile (technology and knowledge based).

Describing "post-industrial" society, Bell sees not only an expansion in information as a result of more service sector employees. For him the 'axial principle' of the society is what he calls "theoretical knowledge". The increasing importance of knowledge has significant effects on all aspects of life. Bell's argument is "that what is radically new today is the codification of theoretical knowledge and its centrality for innovation, both of new knowledge and for economic goods and services" (Bell 1989, 189 in: Webster 1995, 47).

According to Bell this theoretical "knowledge" should characterise the new societies. He rejected the concept of a post-capitalistic society, because the new society would be determined by "knowledge" instead of "labour". According to Webster the primacy of theoretical knowledge is an arresting idea, on which, in reversing the very principles of organisation and change prevalent in industrial society, establishes a definition of a new type of society depending on information and knowledge (Webster 1995, 48).

The German-Canadian sociologist Nico Stehr also developed the concept of a knowledge-based society (Stehr 1994a, 1994b). In contrary to Bell his theory implies the ability of social action. He does not focus mainly on technological focus, but on knowledge contents, the position of the human beings within new media, solidarity and social power. He considers that the increasing penetration of knowledge in all societal levels produces a tremendous need for qualification and performance by all professionals. When for Lane the amalgamation between the scientific, public and economic sector still was a wishful thinking, according to Stehr's analysis the role of *experts* becomes extremely important in the knowledge-based society. For him the development of knowledge can therefore be considered as the basis both for social inequality, for social conflicts as well as a source for social solidarity. But similar to Bell's theoretical approach he assumes a strong social change towards a knowledge-based society without developing systematically the problems of social change.

The increasing importance of experts within modern societies has created a specific scientific debate. The assumption is that modern societies create a new mode of production of knowledge, which implies trans-disciplinary as well as interdisciplinary methods and is based on project-oriented organisation of work (Gibbons et al. 1994). But the central idea is that the role of (scientific) experts becomes more and more important in all societal fields. In sum, in the literature we may recognise the following assumptions of the knowledge-based society (Bittlingmeyer 2005, Kübler 2005, Bittlingmayer, Bauer 2006):

- Specific role of information technologies,
- Knowledge-based society as a globalised economy,
- The increasing importance of "knowledge" as a new mode of production (becomes more important than the economic forces "labour" and "capital").

Knowledge-based society without theory?

Although there is a long historical debate about the importance of knowledge for the development of modern societies, there is no consistent theory of a knowledge-based society. Neither in sociology nor in economics or management sciences may we find a closed theoretical and empirical concept of a knowledge-based society. As described above in the literature we may find three basic assumptions about the "knowledge-based society". In the following these assumptions will be clarified in order to locate the debate on "knowledge-based society" in the scientific debates

The role of technology

Coming from the concept of the information society the rise of the "information technology" (Bell 1973) as the main feature becomes the analytical starting point. Not only in political statements but also in scientific literature, information technology became of overwhelming importance. As Webster points out, starting from the technological point of view the impacts have been seen for a long time. But very often this follows a neat linear logic: technological innovation results in social change, which very often is formulated subtle and sometimes not so subtle – technological determinism continues to linger (Webster 1995, 215). Within the debate on knowledge this consideration also can be made.

According to official documents of the *German Federal Ministry for Education and Science* the importance of technology is described explicitly: "By the IT every five years the global knowledge has been doubled; only the half of the knowledge keeps actual and therefore valuable. Every day 20 000 publications worldwide are produced and actually never before the world had such a high amount of scientists working for new knowledge. Knowledge can be considered as the only resource, which can be reproduced infinitely" (BMBF 1998, 7 in: Bittlingmeyer 2005, 57). During the workshop "Global Knowledge Societies" in 1998 in Germany, the Director of the *United Nation Developmental Programme*, Hans D.'Orville, also thought that the technological progress leads to a deep change of societies: "The knowledge society will come. No matter if you want or not" (Bittlingmayer 2005, 57). But also prominent sociologists like Manuel Castells believe in the heart of the information paradigm (Castells 1996, 61 f). In his theory of the "network" technologies play a crucial role:

> "The first characteristic is that information is its raw material: these are technologies to act on information, not just information to act on technology, as was the case in previous technological revolutions. The second feature refers to the pervasiveness of effects of new technologies. Because information is an integral part of all human activities, all processes of our individual and collective existence are directly shaped by the new technological medium. The third characteristic refers to the networking logic of any technological system. Fourthly the information technology paradigm is based on flexibility.

Castells' descriptions about the technological paradigm significantly characterise the new pattern of modern societies. But also here the information technologies are considered as the cause of the changes. The technological process generally is regarded as somehow evolutionary. The speeding up processes, caused by the technology, have a tremendous effect on the local and international markets. And this leads to the next assumption of knowledge-based societies. The direct effects are based on the changes of time and space of the production mode, which has its effects on the regional, national and global level.

Knowledge-based societies are global societies

After the introduction of the WorldWideWeb at the beginning of the 1990s this technological innovation led to new modes of production. Especially a new international division of labour of 'white colour work' in the service sector created new types of international labour structures (Huws et al. 2003). Generally these discussions focus not only on new modes of production worldwide but also underline an increasing of the global trade volume (Castells 1996, Held et al. 1999). A look on the empirical outcome of the global structures for the decade of the 1990s showed however that the assumption of the increasing figures of the global trade cannot be approved. The US-economists Paul Hirst and Graham Thompson analysed the figures of the whole international trade volume of the 20.Century. In spite of the methodical problems this type of historical analyses causes, the two economists came to the result that at the end of the 20th Century the international trade volume was the same as in the 1920s. (Bittlingmayer 2005).

The real shift today is – according to Hirst and Thompson - the intensification of the trade partners. The results showed that the economic globalisation today has to be redefined as an increasing volume of trade between the USA, EU and specific countries of the Asian-Pacific-region. Between 1980 and 1998 the volume of trade between this triad aroused from 17.4% to 25.2% whereas the volume of trade between the triad and the remaining countries decreased dramatically from 35.7% to 22.9%. Especially the trade with the African continent (except South Africa) fell behind the development (Deutscher Bundestag 2002).

To sum up the last thirty years, there can be considered an increasing concentration of trade between the economic powerful triad. This means that many countries worldwide participate neither in global technological development nor in new modes of production. But these developments produced an increasing polarisation between the 'industrialised' Northern countries and the 'developed' countries of the Southern countries. Thus for many countries the possibility of integration into the global market has worsened.

This little example shows that the assumption about the global character of knowledge-based societies has to be distinguished carefully. The development of new modes of production, the increasing role of new technologies, more segmented *and* concentrated pattern of an international division of labour, the increasing economic power of corporations and at least the crucial role of the financial markets have to be analysed with more empirical evidence. Having these considerations in mind the notion of knowledge-based society should be enriched by these debates in order to evaluate the importance of knowledge for the development of modern societies.

New mode of production

As the description of the global character of the knowledge-based society shows, the debate focuses very much on new modes of production. Indeed the increasing importance of knowledge for the organisation of work processes cannot be neglected, although this debate still existed in the 1960s and 1970s (Porat 1976, Mattelart 2003). In the early 1990s middle sized and big companies started re- organisation processes, which were based on technological innovations.

> "On the demand side this trend can be partially explained by the managerial advantages of out-sourcing, non-critical services (e.g. payroll processing). More fundamentally, however, it reflects the impact of technology change on the supply side. Advantages in information technology have paved the way for multi-unit specialized firms. These firms can explore economies of scale and scope in services production much more effectively than non-specialised firms. Accordingly, their expansion is changing the terms of competition in several service industries (UNCTAD/ World Bank 1994, 8).

The re-organisation of the firm structures only became possible by technological innovations as well as by the further standardisation of the production processes. Thus the composition of the prices of the products has changed dramatically. At the very beginning the global company IBM produced hard and soft ware. In a continuous process the 'knowledge-based activities' became the core activities of the company. Today the main part of the profits implies soft-ware development, sales & support and network-management. Already in the 1980s only 20 000 from 400 000 persons worldwide worked in the production sector. Today the proportion of the costs for research & development, marketing, design and other product oriented services often are much higher than the real material costs of a product. In the automotive sector the costs for marketing and the management of a middle class car are around 18-20% of the full price (Bittlingmeyer 2005).

The continuation of a specific mode of production: standardised production, just-in-time-production, market-oriented organisation of labour, international management structures etc. have led to a mode of production, which in the literature often is described as a knowledge-based economy. The assumption is that "knowledge" as an important value of the global value chain gains more and more importance for the product. Indeed from an economic point of view the importance of "symbolic" values like research, marketing, product management etc. seem much higher than the "material" basis of the production process.

As Robert B. Reich pointed out the proportion of people who work on product-oriented services is steadily increasing in the industrialised countries. He calls them symbolic workers and describes their activity as follows: "They simplify reality into abstract images that can be rearranged, juggled, experimented with, communicated to other specialists, and then transformed back into reality" (Reich 1991, 178). Empirically "symbolic" work has gained importance and has created a visible spectrum of knowledge-based activities (Reich 1991):

1. *Knowledge of production* (research and development, innovation and market oriented products);
2. *Targeting knowledge* (administration, management, organisation);
3. *Orientation knowledge* (consulting, controlling, co-ordination)

But besides methodical and empirical problems of defining this type of work, the question still is, whether there is a shift from the industrial society to a post-industrial or even a knowledge-based society. As different theoretical approaches show symbolic (or abstract) work is one of the main indicators of industrial societies. According to Karl Marx the abstract character of work became the central characteristic of industrialisation (Reich 1991). Whereas standardisation processes mainly took place in the production sector these processes also have reached product-oriented services and the service sector. As phenomena actually it became also relevant for white collar activities instead of blue collar activities. Thus the comprehensive analysis of the importance of "knowledge" within this new mode of production and new pattern of international division of labour should be investigated with a clear theoretical concept. The importance of knowledge as an indicator for further standardisation processes, for the documentation, the

distribution as well as the re-organisation for information is considered as crucial for the whole process. However the technical processes should be differentiated by the social and cultural development. Therefore "knowledge" should not be defined in opposite to the classical driving forces 'labour and capital' but as an important consequence of technical and social innovation processes. In order to have an idea about the influence of processes towards knowledge-based activities the re-organisation of labour should considered from a comprehensive perspective, which keeps continuous as well as discontinuous processes in mind.

The use of knowledge in organisations

One of the classical distinctions, which became central for knowledge in organisations, is the differentiation of implicit and explicit knowledge of Michael Polanyi (Polanyi 1958). According to Polanyi implicit knowledge refers to that knowledge of a person, which has to do with his or her personal experiences, his or her biography and other learning processes in the meaning of an individual "know-how". Typically the person does not reflect necessarily about his or her specific knowledge. A child cannot explain, how to ride a bike, "we know more than we know how to say (Polanyi 1958, 12).

On the contrary explicit knowledge is a formal and documented knowledge, an individual knowledge, which is markedly conscious and functional. The transformation from implicit to explicit knowledge can be extremely difficult for many persons. Still many people are not capable to explicit their implicit knowledge, which is also described as a specific problem of the knowledge management in modern organisations.

Especially Nonaka has dedicated his concerns to the model of an "organisational knowledge creation" (Nonaka 1994). His central idea is that knowledge-based organisations have to support the transformation of individual implicit to explicit knowledge. These learning methods should be intensive communication processes like "rounds of meaningful dialogues" or the use of metaphors, which may offer an idea to the individuals about their implicit knowledge (Nonaka 1994).

Obviously this little excursion shows the complexity of creating organisational learning. According to the German sociologist Willke organisational learning or institutional knowledge can be identified by the personal-independent, anonymous system of rules of every single organisation. This implies the firm traditions, the specific organisational culture, standing operating procedures, guidelines, descriptions of working processes, specific data banks, and codified knowledge of the production process as well as of the projects (Willke 2001, 16). Thus every firm creates his own "community of practise" or his own collective context of experiences, which can be recognised on the basis of individual learning processes. The exchange of information only may succeed, if this transformation process is embedded in the ambitious context of mutual learning. In recent years a growing amount of research has emerged from studies in the IT-sector and organisational studies focusing on knowledge management systems.

> "The main problems knowledge management aims to solve, i.e. the generation, representation, storage, distribution and application of knowledge, are of particular importance in network organisations and with distributed work. In particular, advanced databases are used to support co-operation over distance. Research on a variety of forms of work indicates that neither higher levels of codification of knowledge and increasing planning nor a more intensive use of technology can replace tacit forms of knowledge in the light of increasing complexity and critical work situations" (Flecker et al. 2006, 53).

As the organisational sociology shows significantly there is a theoretical lack of the closed relationship of personal *and* organisational knowledge. Only when the organisational role as

"collective mind" gains the same attention as individuals, the idea of an "intelligent organisation" can be fulfilled (Willke 1998, 2001). Generally the reaction on the dynamic market changes should be the development of a "learning organisation". Actually the debate has its emphases on the demand of the empowerment of the employees. These demands – well known within the concept of lean management - describe the new models of professional performance like creativity, responsibility, teamwork as well as project oriented work.

Individual work and life

Especially in the 1990 there was a broad discussion about the new challenges of "knowledge-based work" especially in the qualified and highly qualified sectors of the labour markets (IT-sector, creative jobs, management etc.). Flexibility as the key word implied all aspects of work: working time, work organisation on the individual level (work-live balance), employment level, new demands of qualification and skills. The empowerment of the individuals within the working processes seemed as an integrated part of working conditions. On one side these aspects in literature have been defined as "the developing work" characterised by broader and more varied work tasks, greater challenges and extended autonomy for employees. On the other side the intensity of work generally has increased in nearly all European countries, partly because of constant readjustment, project-oriented work, individual contracts and result-based salaries (European Foundation 2001). As described above the impact of information technologies made it possible to build up complex organisation and there is a strong link between new technologies and work intensity (Altieri et al. 2006, 150).

In terms of new organisation pattern the strong integration of women in the so-called creative parts of the IT-sector of the labour market were considered to become a major area of employment of qualified women (Boß, Roth 1992). This impression was supported by the following factors (modified according to Boes, Trinks 2005, 283):

- A strong customer orientation changed the core competencies needed for the tasks. Social competencies and teamwork gained importance, whereas the number of purely technical tasks decreased in many professions.
- Organisational structures of the enterprises, such as flat hierarchies, hardly formalised career paths, and open enterprise cultures resulted in a large scope of individual and creative actions and, hence, good professional opportunities of women in particular.
- The promotion of women was emphasised: specific demands of this branch for performance, creativity, and qualification pushed the integration of women. Issues like the compatibility of job and family and the promotion of women had a comparatively high priority in the enterprise strategies.

At an individual level the organisation of work, described above, has reached to a new social character that Voß and Pongratz described as *Arbeitskraftunternehmer* – "entreployee" or entrepreneur of his or her own labour power (Voß 1998, Pongratz, Voß 2003). According to these authors, this ideal hype concept includes three main characteristics (Flecker et al. 2006, 51):

1. *self-control*: intensified active and practical planning, control and monitoring of work by the person responsible;
2. *self-commercialisation*: intensified active and practical "production" and "commercialisation" of one's own capacities and potential on the labour market as well as within companies;

3. *self-rationalisation*: self-determined organisation of one's daily life and long-term plans, and the tendency to accept willingly the importance of the company as an integral part of life.

As the literature points out, the complex development in today's workplace has to be scrutinised carefully. Generally the majority of the jobs of the so-called "knowledge-based work" in the service sector for which the terms were developed are not relevant for the development of jobs in other sectors, i.e. manufacturing work or agricultural work. Besides the IT-sector or other sector with a high demand on qualified employees working in a "knowledge-based society" has many faces. "In other words, the rapid diffusion of information technologies has led – and continues to lead – to a substantial 'exclusion' of large parts of the labour force, either unskilled or wrongly skilled and incapable of training. This bias in the demand for labour, which has only emerged over the past 10 to 15 years, is likely to become much more pronounced in the rest of the 1990s" (Freemann, Soete, Efendioglu 1995, 600).

In order to analyse the whole range of aspects of "knowledge-based work" nowadays the differentiation between sectors and branches is needed. The main debates in the last decade were based in the qualified and high qualified branches, which cannot be considered as representative for the whole labour market. Without doubt 'knowledge' became an important indicator for new pattern of work but other processes like the intensification of work, de-skilling or up-skilling processes within the working profiles, speeding up processes etc. have to be interrelated more theoretically and empirically with the "knowledge-based work".

Industrial society or "knowledge-based society"? Some Conclusions

Although the speech about the "knowledge-based society" should be often understood as a metaphor for the modernity of societies the normative power of this description cannot be denied. Not only in political statements but also in scientific debates "knowledge" as a remarkable indicator for the changing character of modern societies is based on concepts of "modernity" and "technological progress", which seemed overcome at least in an evolutionary characteristic. In order to describe an actual diagnosis of modern societies there is a broad range of evidences, which are mainly covered by the notion of a "knowledge-based society" as it is described by the diffusion of information technologies in private households, the re-organisation of a global economy, the change towards lean-management in companies and in the public service sector, the new pattern of work-live balances, the emphasis of "knowledge" within the global value chain as well as the increasing importance of experts for political decision processes.

The popular assumption of a transition from the industrial society to a post-industrial or even to a "knowledge-based society" as a basic concept turned out to be only of limited value. The thesis of the article that the "knowledge-based society" is not based on a theoretical and empirical concept. In order to strengthen the notion of "knowledge" the term should be developed more conceptionally and be interrelated much more with other theoretical approaches dealing with societal changes. As long as the concept of a "knowledge-based society" isn't approved it seems likely to think about Adorno's question about the actuality of a revised concept of an industrial society.

References

Altieri, G., Oteri, C. Pedaci, M., Dahl-Jorgensen, C., Satermo, T. Torvatn, H. (2006): Changes in Quality of Life, in: Huws, U. (ed.): *The Transformation of Work in a Global Economy: towards a conceptual framework*. Leuven, 145-160

Bell, D. (1962): *The End of Ideology: On the Exhaustion of Political Ideas in the Fifties*. Revised edition, New York

Bell, D. (1973): *The Coming of Post-Industrial Society. A Venture in Social Forecasting*. New York

Bittlingmeyer, U. H. (2005): *Wissensgesellschaft als Wille und Vorstellung*. Konstanz

Bittlingmeyer, U. H., Bauer, U. (eds.) (2006): *Die Wissensgesellschaft. Mythos, Ideologie oder Realität*? Konstanz

Boes, A; Trinks, K. (2005): Interessen und Interessenhandeln von IT-Beschäftigten in der Genderperspektive. In: Funder, M.; Dörhöfer, S.; Rauch, Ch. (eds.): *Jenseits der Geschlechterdifferenz? Geschlechterverhältnisse in der Informations- und Wissensgesellschaft*. München, 284-304

Boß, C., Roth, V. (1992): *Die Zukunft der DV-Berufe*. Opladen

Castells, M. (1996): *The Rise of the Network Society. The Information Age: Economy, Society and Culture*, Vol. I., Oxford

Deutscher Bundestag (2002): Schlussbericht der Enquete-Kommission Globalisierung der Weltwirtschaft – Herausforderungen und Antworten, Drucksache 14/9200. Berlin

European Foundation for the Improvement of Living and Working Conditions (2001): *Employment trough flexibility: squaring the circle*. Office for Official Publications of the European Communities, Luxembourg

Flecker, J., Papouschek, U., Gavroglou, S. (2006): New Forms of Work Organisation and Flexibility in the Knowledge-based society, in: Huws, U. (ed.): *The Transformation of Work in a Global Economy: towards a conceptual framework*. Leuven, 45-60

Freemann, Ch., Soete, L., Efendioglu, U. (1995): Diffusion and the Employment. Effects of Information and Communication Technology, *International Labour Review*, Vol. 134, No. 4-5 (1995), 587-603

Gibbons, M., Limoges, C., Nowotny, H., Schwartzmann, S., Scott, P., Trow, M. (1994): *The New Production of Knowledge. The dynamics of science and research in contemporary sciences*. London.

Held, D., Mc Grew, Goldblatt, D., Perraton, J. (1999): *Global Transformation*. Cambridge

Huws, U. (2003): *When works takes flight*: final report of the EMERGENCE project. IES, Brighton

Kübler, H.-D. (2005): *Mythos Wissensgesellschaft. Gesellschaftlicher Wandel zwischen Information, Medien und Wissen. Eine Einführung*. Wiesbaden

Maasen, S. (1999): *Wissenssoziologie*. Bielefeld

Mattelart, A. (2003): *Kleine Geschichte der Informationsgesellschaft*. Berlin

Porat, M. U. (1976): *The Information Economy*. Stanford

Polányi, M. (1958): *Personal knowledge: towards a post-critical philosophy*. Chicago

Pongraß, H. J., Voß, G. G. (2003): From *employee* to *entreployee*: towards a *selfentrepreneurial* work force?, *Concepts and Transformation*, Vol 8, No 3, 239-254

Nonaka, I. (1994): A dynamic theory of organizational knowledge creation. *Organization Science* 5, 1994, 95-103

Reich, R. (1991): *The Work of Nations. Preparing Ourselves for 21st-Century Capitalism*. New York

Renzl, B. (2004): Zentrale Aspekte des Wissensbegriffs – Kernelemente der Organisation von Wissen. In: Wyssusek a.a.O., p 27-42

Stehr, N. (1994a): *Arbeit, Eigentum und Wissen. Zur Theorie von Wissensgesellschaften*. Frankfurt, M.

Stehr, N. (1994b): *Knowledge Societies*. London

UNCTAD/ World Bank (1994): *Liberalizing International Transactions in Services: A Handbook*. New York, Genf

Webster, F. (1995, 1.edition): *Theories of the Information Society*. London

Willke, H. (1998): Organisierte Wissensarbeit, *Zeitschrift für Soziologie 27*, H 3, 161-177

Willke, H. (2001): Systemisches Wissensmanagement. Stuttgart

Wyssusek, B. (ed.) (2004): Wissensmanagement komplex. Perspektiven und soziale Praxis. Berlin

Voß, G. G. (1998): Die Entgrenzung von Arbeit und Arbeitskraft. Eine subjektorientierte Interpretation des Wandels der Arbeit. In: *Mitteilungen aus der Arbeitsmarkt- und Berufsforschung*, Jg. 31, Nr. 3, 473-487